

DATE: October 7, 1988

FROM: Refuge Manager, Back Bay NWR

SUBJECT: FY 1989 - Marsh and Water Management Program

TO: Associate Manager - Refuges South

Attached is the Back Bay NWR FY 89, Marsh and Water Management Program. This program is an attempt to improve management of the nearly 1,000 acres of habitat which can be managed on the barrier spit portion of the Refuge. Some additional management is planned (primarily fire-oriented) in MSU's K and L (Bay Islands).

Through the implementation of this labor intensive annual program, the refuge will be able to utilize equipment and supplies purchased in FY 87 and 88 to improve waterfowl habitat in refuge marshes.

This program follows the outline presented in 6RM2 as closely as possible. This program was expanded to allow for coverage of force account management activities which the outline does not allow for. Planned elevations are covered in Table 1. The justification for these planned water levels is adequately outlined in the Plan. To re-state the reasons for management in the program would be redundant.

Submitted By: Anthony D. Legn Date: 10-7-88  
Refuge Manager

Reviewed By: Richard Sojda Date: 3-8-89  
*REC'D WITH REC. BIOD. 3-16-89* rec'd 2-21-89

Approved By: Thomas J. McAndrew Date: 3-17-89  
Associate Manager - RFS

cd: FB-S  
3-20-89

## ANNUAL MARSH AND WATER MANAGEMENT PROGRAM - FY 89

I. INTRODUCTION: Marsh and water management activities have been conducted for nearly thirty years at Back Bay NWR. Annual programs were submitted for many years. In the early 1970's the management effort was de-emphasized due to the shift to administration of the Motor Vehicle Access Permit Program. In the era when annual programs were non-existent, managers apparently carried out water level manipulations and management activities based on the memories and knowledge of the staff (maintenance). In 1985 an annual program was prepared which basically outlined the current management regime.

The 1985 program was generally followed during 1986 - 1988. During that time, slight changes in the management effort occurred. The reasoning for the changes was to provide managers with information from which they could improve the program. Based on this experience and a renewed desire to improve marsh and water management efforts at Back Bay NWR, the Marsh and Water Management Plan was totally revised during FY 88. This program is the first annual program proposed within the framework of the new plan.

## II. ANALYSIS OF 1988 PROGRAM ACTIVITIES

1988 was another year of learning for improvement in water management activities at Back Bay NWR. Based on our experience in 1987 (A Pool), summer impoundment water levels were held at higher levels than in previous years. Rather than drawing levels down to 0.5-1.0' above sea level (NGVD) as has been done in previous years, levels were maintained at 1.0-1.5' above sea level. This management regime resulted in maintenance and enhancement of wetland vegetation in the three primary impoundments (A, B, and C). Past water management effort had been oriented towards production of upland plants (1974 program) which would then be flooded in the fall. 1988 efforts, however, were oriented in favor of producing high quality wetland vegetation. The result of these slightly higher water levels has been an excellent growth of three-squares and other wetland dependent species as well as a decrease in upland oriented species.

Efforts continued throughout the year to improve the refuge water supply. The channel dredging project, initiated in 1987, is an attempt to improve the capability of the refuge to flood managed wetlands. Upon completion, a 1500' channel approximately 30' wide by 6.5 feet deep, will provide Back Bay water to the twin 6,000 gallon electric pumps located in the south end of C Pool. In early FY 88, partial completion of this channel enhanced the ability of the refuge to respond to the needs of resting and wintering waterfowl. Now, when bay water levels fall (through the influence of wind tides in the early fall) refuge personnel are able to pump into the impoundments via the channel and pumps.

In FY 87, an Advanced Procurement Planning Project (APP) was initiated to evaluate the need for, and the appropriate design of, inter-impoundment water control structures. With the implementation of the dredging project, the need to improve flow between pools A, B, and C, and to the marshes east of the East Dike Road, became evident. The APP was initiated to address this need. A verbal report was received on this project in early 1988. This report (from RO-EN) recommended the construction of a storage pool in C-Pool and a diked flume in B-Pool to provide positive water flow (N→S) throughout the impoundments.

Due to a lack of adequate data, the Regional Engineer recommended that additional elevation data be gathered on Refuge impoundments. This data was gathered by Regional Surveyors in the spring of 1988. This effort demonstrated that bottom elevations of refuge impoundments range from about sea level to 2.0 feet above sea level. However, the predominant elevation is between 1.0-1.5' above sea level. This data has enabled the Refuge to fine tune it's management effort and improve wetland habitats.

In FY 87 and FY 88, Back Bay received ARMM funding in the amount of 50,000 per year. These funds allowed the Refuge to improve it's capability to manage Refuge resources. In the absence of the knowledge required to make major changes in management, and taking into account the lack of data available to managers, the decision was made to expend the money to improve the Refuge's equipment and impoundment management materials. Major procurements in equipment, vehicles, and the like in FY 87 and FY 88 included the following; Ford 555B Backhoe Loader, 4WD ATV, Allis-Chalmers Front-End Loader, Kewanee disk, 4WD Dump Truck, ten 24" aluminum water control structures, salinity tester, IBM/AT compatible computer, road gravel, level and tripod, and other miscellaneous supplies.

Management activities in FY 88 provided important habitat (locally) for migratory waterfowl and wetland-dependent wildlife. Water levels were maintained at 1.3 to 2.0' above MSL. Habitat was provided for; (peaks) -- 6,000 snow geese, 1,000 mallards, 2,500 black ducks, 500 pintails, 500 blue-winged teal, 1,550 green-winged teal, and other various waterfowl species. Table 1 shows water levels maintained during FY 88.

### III. PLANNED WATER MANAGEMENT FOR FY 89

The FY 89 water management effort will build on the experience gained in 1987 and 1988. Efforts will be in accordance with the recently submitted Marsh and Water Management Plan. Table 1 (Attached) shows planned water levels for FY 89 for the three major Moist Soil Units. Our ability to control levels in Units D, E, G, H, and J is minimal. Levels will be held as high as possible throughout the summer to encourage growth of wetland vegetation.

Efforts in FY 89 will also focus on improving our water distribution capabilities. These efforts will proceed as follows (listed in priority order):

1 -- Replace/Install New Water Control Structures.

Ten new aluminum, stop-log water control structures were purchased in FY 88. Concrete pipes to fit these structures are on hand. During FY 89, refuge personnel will attempt to install/replace as many WCS's as possible to enhance management of refuge Moist Soil Units. Attempts will be made to secure required permits during the winter months with construction activity planned for the months of April - September. Priorities will be for structures in the C/D Crossdike, D/E Crossdike, between C Pool and Unit G (East Dike), and between B Pool and Unit H. As structures are replaced, new water elevation guages will be set with a range of -3 to +4 feet (NGVD). Zero (0) will equal sea level (previously a guage reading of 9.0 equalled sea level).

2 -- Improve Ditches

Refuge ditches are inadequate to move water between units. Map D of the Refuge's Marsh and Water Management Plan illustrates planned ditches for refuge Moist Soil Units. As in task #1 above, permit applications will be submitted in the fall of 1988. Ditching activities will be performed using refuge equipment. Planned construction would occur in April - September 1989. Priorities will be identified in permit applications. In general, our efforts will be geared towards moving water east and south through refuge Moist Soil Units.

3 -- Disk Black Needlerush and Root Rake Wax Myrtle/Bayberry

The Marsh and Water Management Plan identifies mechanical control as a viable technique to improve waterfowl habitat. The recently acquired Kewanee disk and 550A root rake will allow Refuge personnel to perform mechanical control techniques. Black needlerush is a low priority waterfowl food (snow geese will feed on tubers) and is actively controlled via refuge activities. Large amounts of Myrica complex brush areas are evident in the eastern edges of Pools A, B, and C and in MSU's east of the East Dike. Root raking and burning, followed by flooding will discourage growth of Myrica sp. and improve habitat for waterfowl.

The goal for FY 89 will be to disk 25 acres of black needlerush during July and August - primarily in A Pool. Root raking of 15 acres of Myrica in B Pool and Unit G is planned for May and June.

#### 4 -- Phragmites Control

In 1986 and 1987 Rodeo was applied to a total of approximately 50 acres of phragmites in the various, manageable Moist Soil Units. Elimination of phragmites is a goal of Marsh and Water Management. Follow-up spraying will be initiated on needed areas in September of 1989. Thirty gallons of Rodeo is on hand for this purpose. If additional chemical is available, control will be initiated on areas not previously sprayed in all Moist Soil Units.

#### 5 -- Prescribed Burning

After many years of poor success in the use of prescribed fire, refuge personnel performed two successful prescribed burns in FY 88. In October, Units D and E were burned to promote late season herbaceous growth and improve habitat for wintering geese. Unit E was mowed prior to burning. In late May, the large (mostly upland) field on Long Island - Unit K - was successfully burned. This fire resulted in a nearly pure stand of Johnsongrass in the field.

Prescriptions in FY 89 will be submitted during October/November, 1988. Preliminary plans call for a prescribed burn of C Pool, burning previously sprayed phragmites stands, and burning Bay marshes in Moist Soil Units K and L. Most prescribed burning is planned for the winter months when the fuel is drier and water levels (bay marshes) are lower. Prescribed fire is primarily utilized to improve Snow Goose habitat (immediate benefit) and to retard succession to improve marshes for ducks, geese, and wading birds.

#### IV. EVALUATION/MONITORING

New vegetation transect procedures will be implemented during FY 89. Attachment #1 of the Marsh and Water Management Plan outlines the vegetation transect procedures which will be utilized. This transect technique involves measuring changes in Moist Soil Unit habitat by comparing cover class changes over time along permanent transect lines. When transect lines are established, they will be recorded permanently and appended to the Marsh and Water Management Plan. Transects will be established and run during August of 1989.

Water elevation data will be gathered periodically throughout the year. In the past, guage readings have been taken daily, which is excessive in terms of program needs. Effective October 1988, guage readings will be taken on each Monday, and on the first and fifteenth of each month. Readings will also be taken after major storm events. Data will be recorded on the attached form (Table 2). To the maximum extent practicable guage readings will be obtained while performing other normal duties (ex. wildlife inventories).

To R.O. (RF) for:

\_\_\_\_ R.O. Engrs.

\_\_\_\_ C.O. (RF)

MONTHLY RECORD OF GAUGE READINGS AND WEATHER

BACK BAY

N. W. Refuge

Month \_\_\_\_\_ 19\_\_

Date	Water Gauge Readings				Remarks	Precip Times	Temperature			Precipitation			
	Dock	"A"	"B"	"C"			Max	Min	A/O	Rain	Snow	Total	
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
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31													

Water Management Unit Name or Number

1	8
2	9
3	10
4	11
5	12
6	13
7	14

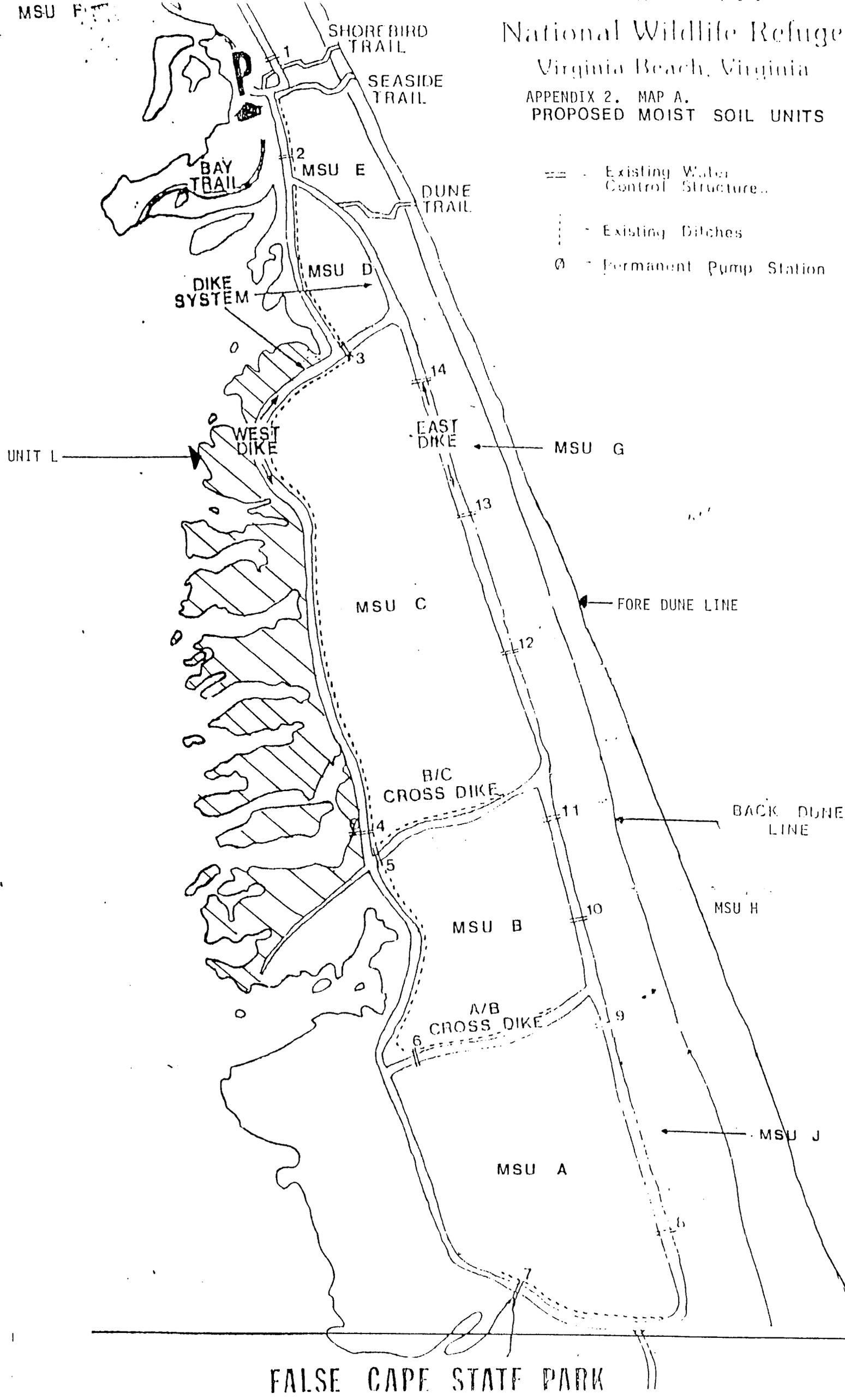
Prepared by:

MSU F

# National Wildlife Refuge

## Virginia Beach, Virginia

### APPENDIX 2. MAP A. PROPOSED MOIST SOIL UNITS





APPENDIX 4 - BACK BAY REFUGE WETLAND  
MANAGEMENT UNITS AND ACREAGE

POOL	TOTAL ACRES		TOTAL UPLAND		SWAMP WETLAND		EMERGENT WETLAND	
	#	%	#	%	#	%	#	%
A	221	- 100	40	- 18	15	- 7	166	- 75
B	114	- 100	2	- 2	3	- 3	139	- 96
C	240	- 100	34	- 14	---		206	- 86
D	17	- 100	13*	- 75	---		4*	- 25
E	25	- 100	10*	- 40	---		15*	- 60
F	75	- 100	23*	- 30	---		52*	- 70
G	88	- 100	18*	- 20	---		70	- 80^
H	76	- 100	8*	- 10	2*	- 2	66	- 88^
J	111	- 100	22*	- 20	33*	- 30	56	- 50^
<hr/>								
TOTALS	997	- 100	170	- 17	53	- 5	774	- 78
	(* estimated)							

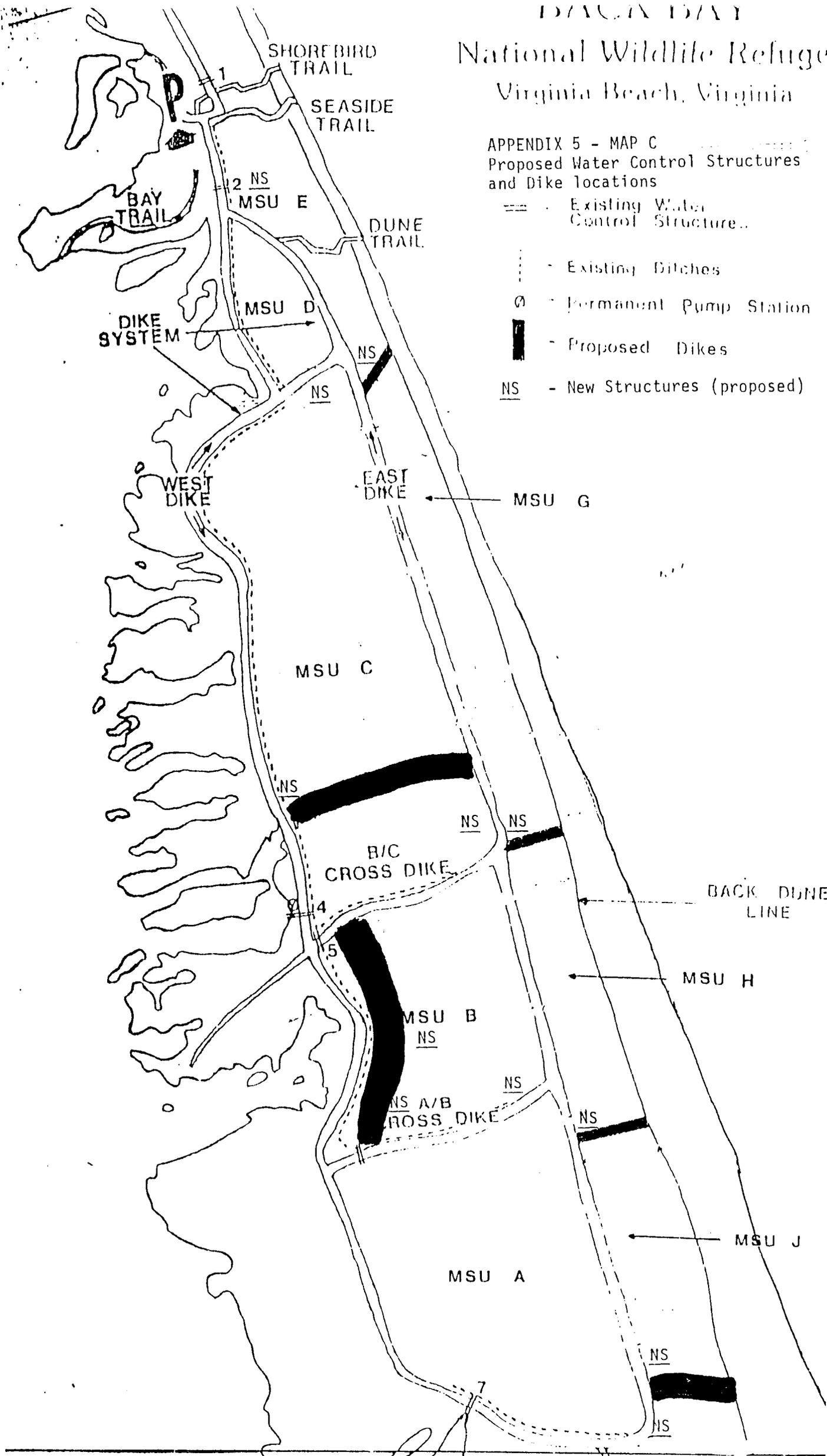
^ Planned - most of G, H, and J Pools presently consist of upland grasses and bayberry/waxmyrtle. At full plan implementation these areas, as well as some of the upland in A-E, will be converted to emergent wetlands.

MSU F

# National Wildlife Refuge Virginia Beach, Virginia

## APPENDIX 5 - MAP C Proposed Water Control Structures and Dike Locations

-  Existing Water Control Structure
-  Existing Ditches
-  Permanent Pump Station
-  Proposed Dikes
- NS - New Structures (proposed)



FALSE CAPE STATE PARK

# BACK BAY

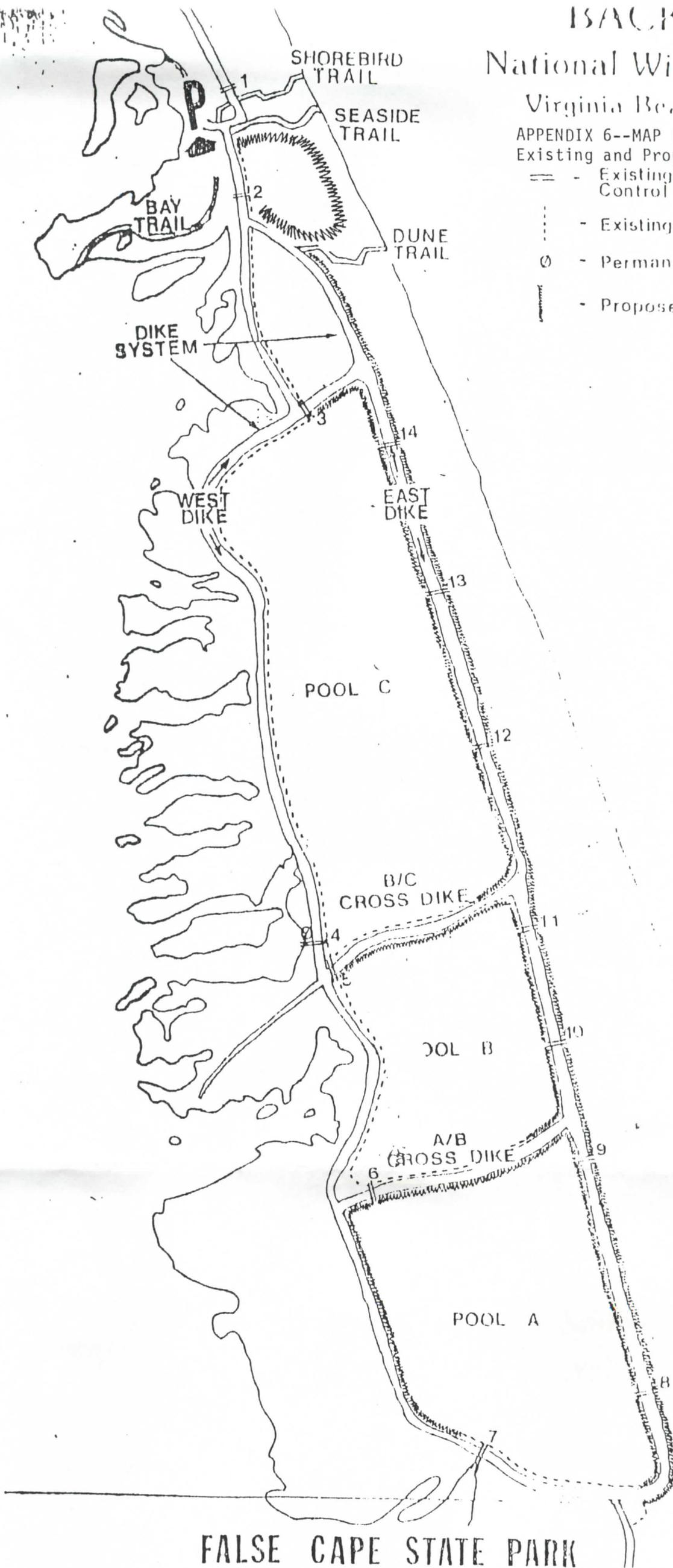
## National Wildlife Refuge

Virginia Beach, Virginia

APPENDIX 6--MAP D.

Existing and Proposed Ditches

- == - Existing Water Control Structures
- - - Existing Ditches
- ∅ - Permanent Pump Station
- - - Proposed Ditches



FALSE CAPE STATE PARK

# memorandum

U.S. FISH AND WILDLIFE SERVICE

ONE GATEWAY CENTER  
SUITE 700

NEWTON CORNER, MASSACHUSETTS 02158

TO: Refuge Manager, Back Bay  
National Wildlife Refuge

FROM: Associate Manager, Refuges South

DATE: **MAR 20 1984**

SUBJECT: Marsh and Water Management Program

Attached is the approved original of subject program; a copy has been sent to Rick.

Comment/Question!

In Section 5 you tout the prescribed burning of Unit K as a success because the fire resulted in a nearly pure stand of Johnsongrass.

In Maryland and Delaware, at least, Johnsongrass is in the law books as a noxious plant and requires that landowners take positive steps to control or eradicate the plant. Is Johnsongrass so listed in Virginia? If so, what hath we created, biological value aside? Please advise.

*Tommy Andrews*

Attachment

